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EXAMINER	
LAM, DUNG LE	

ART UNIT	PAPER NUMBER
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Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)	
	10/626,165	CAVE ET AL.	
	Examiner	Art Unit	
	Dung Lam	2617	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☐ Responsive to communication(s) filed on _____.

2a)☒ This action is **FINAL**. 2b)☐ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) 1-56 is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) 1-56 is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☒ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) Paper No(s)/Mail Date ___.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ .
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: _____.

DETAILED ACTION

Double Patenting

1. The nonstatutory double patenting rejection is based on a judicially created doctrine grounded in public policy (a policy reflected in the statute) so as to prevent the unjustified or improper timewise extension of the "right to exclude" granted by a patent and to prevent possible harassment by multiple assignees. See *In re Goodman*, 11 F.3d 1046, 29 USPQ2d 2010 (Fed. Cir. 1993); *In re Longi*, 759 F.2d 887, 225 USPQ 645 (Fed. Cir. 1985); *In re Van Ornum*, 686 F.2d 937, 214 USPQ 761 (CCPA 1982); *In re Vogel*, 422 F.2d 438, 164 USPQ 619 (CCPA 1970);and, *In re Thorington,* 418 F.2d 528, 163 USPQ 644 (CCPA 1969).

A timely filed terminal disclaimer in compliance with 37 CFR 1.321(c) may be used to overcome an actual or provisional rejection based on a nonstatutory double patenting ground provided the conflicting application or patent is shown to be commonly owned with this application. See 37 CFR 1.130(b).

Effective January 1, 1994, a registered attorney or agent of record may sign a terminal disclaimer. A terminal disclaimer signed by the assignee must fully comply with 37 CFR 47.73(b).

2. Claims 1 is rejected under the judicially created doctrine of obviousness-type double patenting as being unpatentable over the corresponding claim 74 and 75 of Application No. 10/667633 (U.S. Publication No. 2004/0063430). Although the conflicting claims are not identical, they are not patentably distinct from each other. Claim 1 of the pending application has substantially the same limitations as the combined claims 74 and 75 of the co-pending claim except for the step of continuing the wireless communication via the selected handover base station. Although the conflicting claims are not identical, they are not patentably distinct from each other because the pending claim is broader than the copending claims. Therefore, the copending claim encompasses all the limitations of the claimed limitations from the pending application No. 10/667633.

3. Claims 23 is rejected under the judicially created doctrine of obviousness-type double patenting as being unpatentable over the corresponding claim 59 of the

copending Application No. 10/667633 (U.S. Publication No. 2004/0063430). Although the conflicting claims are not identical, they are not patentably distinct from each other because the pending claim is broader than the copending claim, the copending claim encompasses all the limitations of the claimed limitations from the pending application No. 10/667633.

4. Claims 35 is rejected under the judicially created doctrine of obviousness-type double patenting as being unpatentable over the corresponding claim 74 of Application No. 10/667633 (U.S. Publication No. 2004/0063430). Although the conflicting claims are not identical, they are not patentably distinct from each other. Claim 35 of the pending application has substantially the same limitations as claim 74 of the co-pending claim except for a slight difference in the last step. The last step of the co-pending claim recites "continuing the wireless communication via the selected handover base station" while the pending claim recites "establishing a wireless communication between the selected base station and the mobile unit". It is obvious that the step of establishing a wireless communication will result in a continuation of communication via the selected handover base station. Therefore, the two claims are substantially the same.

5. Claim 48 is rejected under the judicially created doctrine of obviousness-type double patenting as being unpatentable over the corresponding claim 83 of the copending Application No. 10/667633 (U.S. Publication No. 2004/0063430). Although the conflicting claims are not identical, they are not patentably distinct from each other because the copending claim is broader than the pending claims. Therefore, the copending claim encompasses all the limitations of the claimed limitations from the pending application No. 10/667633.

6. Claim 55 is rejected under the judicially created doctrine of obviousness-type double patenting as being unpatentable over the corresponding claim 71 and 83 of the copending Application No. 10/667633 (U.S. Publication No. 2004/0063430). Although the conflicting claims are not identical, they are not patentably distinct from each other

because the copending claim is broader than the pending claims. Therefore, the copending claim encompasses all the limitations of the claimed limitations from the pending application No. 10/667633.

Claim Rejections - 35 USC § 103

1. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

2. Claim **23** is rejected under 35 U.S.C. 103(a) as being unpatentable over **Budnik** (US Pat. No. 6052064) in view of **Sawaya** (US Pat. No. 5732358).

3. Regarding claim 23, **Budnik** discloses a wireless messaging system with a plurality of base transmitters and receivers and a plurality of portable subscriber units (see column 3, lines 12-35), which reads on the claimed "communication network for wireless communication with mobile units," and "a plurality of base stations, each providing wireless communication services in a geographic coverage area that may or may not overlap with the geographic coverage areas of other base stations." The system includes a fixed portion including a controller that controls the base transmitters (see column 3, lines 12-35), which reads on the claimed "at least one base station interface connected to the base stations." The RF signals transmitted by the portable subscriber units to the base receivers comprise responses that include scheduled messages and unscheduled messages, such as registration requests (see column 3, lines 60-67), which reads on the claimed "each base station configured to detect

sounding pulses emitted from mobile units in order to establishment wireless communication with such mobile units." A location estimate is determined by the controller in cooperation with the base receivers using well-known techniques, such as comparing RSSI levels of a plurality of base receivers during receipt of the inbound message (see column 5, lines 3-19), which reads on the claimed "each base station configured to communicating information related to a detected sounding pulse from a mobile unit to a selected interface." Next, the base transmitters each decide independently whether to transmit the outbound message to the subscriber unit (see column 9, lines 8-15), which reads on the claimed "select a base station for wireless communication with a mobile unit that transmitted a sounding pulse based on the information communicated from each base station that detected the sounding pulse emitted from that mobile unit." Finally, a beam forming antenna may be aimed in the direction of the portable subscriber unit (see column 9, lines 44-50), which reads on the claimed "each base station configured to direct a communication beam when selected to a respective mobile unit to establish wireless communication." Budnik fails to disclose the interface selects the base station. In a similar field of endeavor, **Sawaya** discloses a system where the controller selects the appropriate base station to communicate with the mobile station (see column 4, lines 8-11). It would have been obvious to a person of ordinary skill in the art at the time of the invention to modify **Budnik with Sawaya** et al to include the above selection of the base station at a central controller in order to avoid using valuable computing resources at each base station.

4. Claim **1, 5, 9, 11, 13 and 19** are rejected under 35 U.S.C. 103(a) as being unpatentable over **Budnik** (US Pat. No. 6052064) in view of **Scherzer** (US Pat. No. 6347234) and further in view of **Sawaya** (US Pat. No. 5732358).

5. Regarding claim **1**, Budnik discloses a wireless messaging system with a plurality of base transmitters and receivers and a plurality of portable subscriber units (see column 3, lines 12-35), which reads on the claimed radio network having a plurality of base stations, each providing wireless communication services in a respective geographic coverage area that may or may not overlap with the geographic coverage areas of other of the base stations." The system includes affixed portion including a controller that controls the base transmitters (see column 3, lines 12-35), which reads on the claimed "interface connected to the base stations." The RF signals transmitted by the portable subscriber units to the base receivers comprise responses that include scheduled messages and unscheduled messages, such as registration requests (see column 3, lines 60-67), which reads on the claimed "sounding pulse from a wireless mobile unit located in a geographic coverage area of at least one of the base stations." A location estimate is determined by the controller in cooperation with the base receivers using well-known techniques, such as comparing RSSI levels of a plurality of base receivers during receipt of the inbound message (see column 5, lines 3-19), which reads on the claimed "communicating information related to the detected sounding pulse to the interface by each base station detecting the sounding pulse. Next, the base transmitters each decide independently whether to transmit the outbound message to the subscriber unit (see column 9, lines 8-15), which reads on the claimed "selecting

one of the base stations that detected the sounding pulse for mobile unit communication based on the communicated information." Finally, a beam forming antenna may be aimed in the direction of the portable subscriber unit (see column 9, lines 44-50), which reads on the claimed "directing a communication beam from the selected base station to the mobile unit to establish wireless communication." Budnik fails to expressly disclose that the sounding pulse from the mobile unit is omnidirectional. In a similar field of endeavor, **Scherzer** discloses that in conventional wireless communication systems, information is transmitted from the subscribers base to the base station by broadcasting omnidirectionally (see column I, lines 27-37). It would have been obvious to a person of ordinary skill in the art at the time of the invention to modify Budnik with Scherzer such that the subscriber units broadcast omnidirectionally in order to avoid the need to point a mobile in a particular direction for reception. The combination of Budnik and Scherzer fails to disclose the interface selects the base station. In a similar field of endeavor, **Sawaya** discloses a system where the controller selects the appropriate base station to communicate with the mobile station (see column 4, lines 8-11). It would have been obvious to a person of ordinary skill in the art at the time of the invention to modify the combination of Budnik and Scherzer with Sawaya to include the above selection of the base station at a central controller in order to avoid using valuable computing resources at each base station.

6. Regarding claim **5**, the above combination of Budnik, Scherzer and Sawaya discloses determining a relative location of the mobile unit with respect to the beamforming antenna of the selected base station based on information related to the

detected sounding pulse (see Budnik column 9, lines I-57). Budnik further discloses that a beam forming antenna may be aimed in the direction of the portable subscriber unit (see Budnik column 9, lines 44-50), which reads on the claimed "the directing of a communication beam includes operating the selected base station's antenna to form a communication beam covering a selected portion of the coverage area service by the selected base station that encompasses the relative location of the mobile unit."

7. Regarding claim **9**, the combination of Budnik, Scherzer and Sawaya discloses that the RF signals transmitted by the portable subscriber units to the base receivers comprise responses that include scheduled messages and unscheduled messages, such as registration requests (see Budnik column 3. lines 60-67), which reads on the claimed "the transmitting of a sounding pulse is from each of a plurality of mobile units." A location estimate is determined by the controller in cooperation with the base receivers using well-known techniques, such as comparing RSSI levels of a plurality of base receivers during receipt of the inbound message (see Budnik column 5, lines 3-19), which reads on the claimed "the communicating information includes communicating information related to each distinguishable sounding pulse from each respective mobile unit detected by a base station to a respective selecting interface for base station selection with the respective mobile unit." Next, the base transmitters each decide independently whether to transmit the outbound message to the subscriber unit (see Budnik column 9, lines 8-15), which reads on the claimed "the base station selection includes selecting a base station by each respective selecting interface for each respective mobile unit communication based on the information related to the

distinguishable detected sounding pulse of the respective mobile unit from each base station that detected a distinguishable sounding pulse of the respective mobile unit." A beam forming antenna may be aimed in the direction of the portable subscriber unit (see Budnik column 9, lines 44-50), which reads on the claimed "for each respective mobile unit for which at least one base station received a distinguishable sounding pulse, directing a communication beam from the respective selected base station to the mobile unit to establish wireless communication."

8. Regarding claim **11**, the combination of Budnik, Scherzer and Sawaya discloses that a location estimate is determined by the controller in cooperation with the base receivers using well-known techniques, such as comparing RSSI levels of a plurality of base receivers during receipt of the inbound message (see Budnik column 5, lines 3-19), which reads on the claimed "determining the relative location of each mobile unit with respect to the beamforming antenna of the respective selected base station based on information related to the detected sounding pulse of the respective mobile unit." A beam forming antenna may be aimed in the direction of the portable subscriber unit (see Budnik column 9, lines 44-50), which reads on the claimed "the respective directing of a communication beam includes operating the respective selected base station's antenna to form a communication beam covering a selected portion of the predefined coverage area service by the respective selected base station that encompasses the relative location of the respective mobile unit."

9. Regarding claim **13**, the combination of Budnik, Scherzer and Sawaya discloses that each of the base transmitters transmits RF signals to the portable subscriber units

(see Budnik column 3, lines 50-67), which reads on the claimed "a first base station is selected for communication with a first mobile unit by a first selected interface." The word "each" above means that the same could happen with another base station, which reads on the claimed "second base station is selected for communication with a second mobile unit by

10. Regarding claim **15**, the combination of Budnik, Scherzer and Sawaya discloses that the portable subscriber units transmits scheduled messages, such as ACKs and NAKs, and registration requests, which are known to contain address information and reads on the claimed transmitting of a sounding pulse "includes transmitting of identification information associated with the sounding pulse transmitted by each respective mobile unit."

11. Regarding claim **19**, the combination of Budnik, Scherzer and Sawaya discloses that the portable subscriber units transmits scheduled messages, such as ACKs and NAKs, and registration requests, which are known to contain address information and reads on the claimed transmitting of a sounding pulse "includes transmitting of identification information associated with the sounding pulse transmitted the mobile unit."

12. Claim **2, 3 and 10** are rejected under 35 U.S.C. 103(a) as being unpatentable over the prior art as applied in the immediately preceding paragraph and further in view of **Purnadi** (US Pub. No. 20010068565).

13. Regarding claim 2, the above combination of **Budnik, Scherzer and Sawaya** fails to disclose the use of a Node B or a RNC. In a similar field of endeavor, **Purnadi**

discloses a UTRAN system (see paragraph 24, with a plurality of Node Bs connected to a RNC (see paragraph 23 and figure 1). The communication between the Node Bs and the RNC is through an Iub interface and the communication between a Node B and a mobile terminal is over a Uu interface (see figure 1). It would have been obvious to a person of ordinary skill in the an at the time of the invention to modify the combination of Budnik, Scherzer and Sawaya with Purnadi to include the above Node Bs and UTRAN in order to take advantage the benefits of a GPRS packet switched network, such as speed.

14. Regarding claim **3**, the above combination of **Budnik, Scherzer, Sawaya and Purnadi** discloses determining a relative location of the UE with respect to the beamforming antenna of the selected Node B based on information related to the detected sounding pulse (see Budnik column 9, lines 1-57). Budnik further discloses that a beam forming antenna may be aimed in the direction of the portable subscriber unit (see Budnik column 9, lines 44-50), which reads on the claimed invention where the directing of a communication beam includes operating the selected Node Bs antenna to form a communication beam covering a selected portion of the coverage area service by the selected Node B that encompasses the relative location of the UE."

15. Regarding claim **10**, the above combination of Budnik, Scherzer and Sawaya fails to disclose the use of a Node B or a RNC. In a similar field of endeavor, **Purnadi** discloses a UTRAN system (see paragraph 24, with a plurality of Node Bs connected to a RNC (see paragraph 23 and figure 1). The communication between the Node Bs and the RNC is through an Iub interface and the communication between a Node B and a

mobile terminal is over a Uu interface (see figure 1). It would have been obvious to a person of ordinary skill in the art at the time of the invention to modify the combination of Budnik, Scherzer and Sawaya with Purnadi to include the above Node Bs and UTRAN in order to take advantage the benefits of a GPRS packet switched network, such as speed.

16. Claims **4, 6 and 12** are rejected under 35 U.S.C. 103(a) as being unpatentable over the prior art as applied in the immediately preceding paragraph and further in view of **Mujitaba** (EP1005190A2).

17. Regarding claim 4, the combination of Budnik, Scherzer, Sawaya and Pumadi discloses a beam formed communication beam that encompasses the location of a user (see Budnik figure 8). However, the above combination of Budnik, Scherzer, Sawaya and Pumadi fails to disclose that the beam will encompass more than one user. In a similar field of endeavor, **Mujitaba** discloses a system where any particular beam at a given time may have a width sufficient to provide simultaneous coverage for at least n of the subscriber units at that time, where n is greater than or equal to two (see paragraph 8). It would have been obvious to a person of ordinary skill in the art at the time of the invention to modify the combination of Budnik, Scherzer, Sawaya and Purnadi with Mujitaba to include the above beam serving more than one user in order to conserve system resources.

18. Regarding claim **6**, the combination of Budnik, Scherzer , Sawaya and Pumadi discloses a beam formed communication beam that encompasses the location of a user (see Budnik figure 8). However, the above combination of Budnik, Scherzer, Sawaya

and Purnadi fails to disclose that the beam will encompass more than one user. In a similar field of endeavor, **Mujitaba** discloses a system where any particular beam at a given time may have a width sufficient to provide simultaneous coverage for at least n of the subscriber units at that time, where n is greater than or equal to two (see paragraph 8). It would have been obvious to a person of ordinary skill in the art at the time of the invention to modify the combination of Budnik, Scherzer and Purnadi with Mujitaba to include the above beam serving more than one user in order to conserve system resources.

19. Regarding claim 12, the combination of Budnik, Scherzer, Sawaya and Pumadi discloses a beam formed communication beam that encompasses the location of a user (see Budnik figure 8). However, the above combination of Budnik, Scherzer , Sawaya and Purnadi fails to disclose that the beam will encompass more than one user. In a similar field of endeavor, **Mujitaba** discloses a system where any particular beam at a given time may have a width sufficient to provide simultaneous coverage for at least n of the subscriber units at that time, where n is greater than or equal to two (see paragraph 8). It would have been obvious for one of ordinary skill in the art at the time *of* the invention to modify the combination of Budnik. Scherzer, Sawaya and Pumadi with Mujitaba to include the above beam serving more than one user in order to conserve system resources.

20. Claims **7 and 14** are rejected under 35 U.S.C. 103(a) as being unpatentable over the prior art as applied in the immediately preceding paragraph and and further in view of **Oobayashi** (US 20020045449).

21. Regarding claims **7 and 14**, the combination of Budnik, Scherzer and Sawaya fails to disclose the retransmitting of a sounding pulse if a response is not received within a period of time. In a similar field of endeavor, Obayashi discloses that if an acknowledgement response does not come from the base station within the predetermined period, the message set to the retransmission standby state is retransmitted at least once (see paragraph 16). It would have been obvious to a person of ordinary skill in the art at the time of the invention to modify the combination of Budnik, Scherzer and Sawaya with Obayshi to include the above retransmission when a response is not received in order to provide a more robust system that is less prone to transmission errors.

22. Claims **16 and 20** are rejected under 35 U.S.C. 103(a) as being as being unpatentable over the prior an as applied in the immediately preceding paragraph and further in view of Velazquez (US Pub No. 20010003443).

23. Regarding claim **16**, the combination of Budnik, Scherzer and Sawaya fails to disclose that each of the mobile units is equipped with GPS and the sounding pulse includes the location information. In a similar field of endeavor, Velazquez discloses a system where mobile units include GPS (see figure 7) and to initiate a call, a mobile unit transmits its current position to the base station (see figure 8). It would have been obvious to a person of ordinary skill in the art at the time of the invention to modify the combination of Budnik, Scherzer and Sawaya with Velazquez to include the above uses of GPS in order to avoid the need for complex computations at the server and therefore better use system resources.

24. Regarding claim **20**, the combination of Budnik, Scherzer and Sawaya fails to disclose that each of the mobile units is equipped with GPS and the sounding pulse includes the location information. In a similar field of endeavor, Velazquez discloses a system where mobile units include GPS (see figure 7) and to initiate a call, a mobile unit transmits its current position to the base station (see figure 8). It would have been obvious to a person of ordinary skill in the art at the time of the invention to modify the combination of Budnik, Scherzer and Sawaya with Velazquez to include the above uses of GPS in order to avoid the need for complex computations at the server and therefore better use system resources.

25. Claims **24, 25 and 27** are rejected under 35 U.S.C. 103(a) as being unpatentable over the combination of Budnik and Sawaya in view of Purnadi.

26. Regarding claim 24, the combination of Budnik and Scherzer fails to disclose the use of a Node B or a RNC. In a similar field of endeavor, Purnadi discloses a UTRAN system (see paragraph 24, with a plurality of Node Bs connected to a RNC (see paragraph 23 and figure 1). The communication between the Node Bs and the RNC is through an lab interface and the communication between a Node B and a mobile terminal is over a Uu interface (see figure 1). It would have been obvious to a person of ordinary skill in the art at the time of the invention to modify the combination of Budnik and Sawaya with Purnadi to include the above Node Bs and UTRAN in order to take advantage the benefits of a GPRS packet switched network, such as speed.

27. Regarding claim 25, the combination of Budnik, Sawaya and Purnadi discloses that a beam forming antenna may be aimed in the direction of the portable subscriber

unit (see Budnik column 9, lines 44-50), which reads on the claimed "selectively operable beamforming antenna configurable to direct a communication beam covering a selected port ion of the coverage area serviced by the Node B that encompasses the relative location of a UE when that Node B is selected to communicate with the UE.

28. Regarding claim 27, the combination of Budnik, Sawaya and Purnadi discloses that a location estimate is determined by the controller in cooperation with the base receivers using well-known techniques, such as comparing RSSI levels of a plurality of base receivers during receipt of the inbound message (see Budnik column 5, lines 3-19), which reads on the claimed "each interface is configured to determine a relative location of a mobile unit that emitted a sounding pulse with respect to the beamforming antenna of a base station that it selects to communicate with the mobile unit based on information related to the detected sounding pulse from the mobile unit." A beam forming antenna may be aimed in the direction of the portable subscriber unit (see Budnik column 9, lines 44-50), which reads on the claimed "each base station has a selectively operable beamforming antenna," and "each the base station, when selected by an interface, is configured to operate its antenna to form a communication beam covering a selected portion of its coverage area that encompasses the relative location of the mobile unit as determined by the interface.

29. Claim 26 are rejected under 35 U.S.C. 103(a) as being unpatentable over the prior art as applied in the immediately preceding paragraph and further in view of **Mujitaba**.

30. Regarding claim 26, the combination of Budnik, Sawaya and Purnadi discloses a beamforming antenna (see Budnik column 9, lines 44-50), and the use of a Node B (see Purnadi **paragraph** 23 and figure 1). The combination of Budnik, Sawaya and Purnadi fails to disclose that a beam will encompass a plurality of Ues, paragraph 8). It would have been obvious to a person of ordinary skill in the art at the time of the invention to modify the combination of Budnik, Sawaya and Purnadi with Mujitaba to include the above beam serving more than one user in order to conserve system resources.

31. Claims 28 and 32 are rejected under 35 U.S.C. 103(a) as being unpatentable over the combination of Budnik and Sawaya in view of Pumadi and further in view of Scherzer.

32. Regarding claims 28 and 32, the combination of Budnik, Sawaya and Purnadi fails to expressly disclose that the sounding pulse from a mobile unit is omnidirectional.

33. In a similar field of endeavor, Scherzer discloses that in conventional wireless communication systems, information is transmitted from the subscribers base to the base station by broadcasting omnidirectionally (see column 1, lines 27-37). It would have been obvious to a person of ordinary skill in the art at the time of the invention to modify the combination of Budnik, Sawaya and Purnadi with Scherzer such that the subscriber units broadcast omnidirectionally in order to avoid the need to point a mobile in a particular direction for reception.

34. Claim 30 is rejected under 35 U.S.C. 103(a) as being unpatentable over the prior art as applied in the immediately preceding paragraph and further in view of Oobayashi.

35. Regarding claim 30, the combination of Budnik, Sawaya, Pumadi and Scherzer discloses a sounding pulse (see Budnik column 3, lines 60-67) that is omnidirectional (see Schermer column 1, lines 27-37). The combination of Budnik, Sawaya, Purnadi and Schermer fails to expressly disclose retransmitting the sounding pulse if a response is not received.In a similar field of endeavor, Oobayashi discloses that if an acknowledgement response does not come from the base station within the predetermined period, the message set to the retransmission standby state is retransmitted at least once (see paragraph 16). It would have been obvious to a person of ordinary skill in the art at the time of the invention to modify the combination of Budnik, Sawaya, and Scherzer with Oobayshi to include the above retransmission when a response is not received in order to provide a more robust system that is less prone to transmission errors.

36. Claim 31 are rejected under 35 U.S.C. 103(a) as being unpatentable over the combination of Purnadi, Sawaya, and Scherzer and further in view of Velazquez.

37. Regarding claim 31, the combination of Budnik, Pumadi, Sawaya, and Scherzer fails to disclose that each mobile unit is equipped with CPS and that the sounding pulse includes location information. In a similar field of endeavor, Velazquez discloses a system where mobile units include GPS (see figure 7) and to initiate a call, a mobile unit transmits its current position to the base station (see figure 8). It would have been obvious to a person of ordinary skill in the art at the time of the invention to modify the

combination of Budnik, Pumadi, Sawaya and Scherzer with Velazquez to include the above uses of GPS in order to avoid the need for complex computations at the server and therefore better use system resources.

38. Claims 35, 40, 44, 48, 52 and 55 are rejected under 35 U.S.C. 103(a) as being unpatentable over Budnik in view of Scherzer and further in view of Menich (US Pub. No. 5,327,575).

39. Regarding claim 35, Budnik discloses a wireless messaging system with a plurality of base transmitters and receivers and a plurality of portable subscriber units (see column 3, lines 12-35), which reads on the claimed "radio network having a plurality of base stations, each providing wireless communication services in a respective geographic coverage area that may or may not overlap with the geographic coverage areas of other of the base stations." The RF signals transmitted by the portable subscriber units to the base receivers comprise responses that include scheduled messages and unscheduled messages, such as registration requests (see column 3, lines 60-67), which reads on the claimed "sounding pulse from a wireless mobile unit located in a geographic coverage area of at least one of the base stations." A beamforming antenna may be aimed in the direction of the portable subscriber unit (see column 9, lines 44-50), which reads on the claimed "directing a communication beam from the selected base station to the mobile unit to establish wireless communication." Budnik fails to expressly disclose that the sounding pulse from the mobile unit is omnidirectional. In a similar field of endeavor, Scherzer discloses that in conventional wireless communication systems, information is transmitted from the

subscribers base to the base station by broadcasting omnidirectionally (see column I, lines 27-37). It would have been obvious to a person of ordinary skill in the art at the time of the invention to modify Budnik with Scherzer such that the subscriber units broadcast omnidirectionally in order to avoid the need to point a mobile in a particular direction for reception. The combination of Budnik and Scherzer fails to disclose that a base station is selected based on the communication beams received by the mobile unit. In a similar field of endeavor, Mujitaba discloses a system where upon activation, an MS scans a pre-programmed spectrum in search of CCCH identification signals transmitted from nearby BTSs, measures a signal quality factor such as signal strength, and selects the BTS providing the largest relative signal strength (see column 1, lines 47-56). It would have hero nhvinus to a person of ordinary skill in the art at the time of the inventinn to modify the combination of Budnik and Scherzer with Mujitaba to include the selecting of a base station at the mobile station in order to reduce the possibility of handover to a nearby BTS that has low signal strength due to a propagation impediment.

40. Regarding claim 40, the combination of Budnik, Scherzer and Mujitaba discloses determining a relative location of the mobile unit with respect to the beamforming antenna of each sounding pulse receiving base station based on information related to the detected sounding pulse (see Budnik column 9, lines 1-57). Budnik further discloses that a beam forming antenna may be aimed in the direction of the portable subscriber unit (see Budnik column 9, lines 44-50), which reads on the claimed "the directing of a communication beam includes operating the selected base station's antenna to form a

communication beam covering a selected portion of the coverage area service by the selected base station that encompasses the relative location of the mobile unit."

41. Regarding claim 44, the combination *of* Budnik, Scherzer and Mujitaba discloses that the portable subscriber units transmits scheduled messages, such as ACKs and NAKs, and registration requests, which are known to contain address information and reads on the claimed transmitting *of* a sounding pulse "includes transmitting of identification information associated with the sounding pulse transmitted the mobile unit.

42. Regarding claim 48, Budnik discloses a wireless messaging system with a plurality of base transmitters and receivers and a plurality of portable subscriber units (see column 3, lines 12-35), which reads on the claimed "mobile unit for use in a radio network having a plurality of base stations, each base station providing wireless communication services in a respective geographic coverage area that may or mat not overlap with the geographic coverage areas of other of the base stations." The RF signals transmitted by the portable subscriber units to the base receivers comprise responses that include scheduled messages and unscheduled messages, such as registration requests (see column 3, lines 60-67), which reads on the claimed "transmitter configured to transmit an omnidirectional sounding pulse." A beamforming antenna may be aimed in the direction of the portable subscriber unit (see column 9, lines 44-50), which reads on the claimed "receiver for receiving communication beams from base stations that detected a sounding pulse transmitted by the mobile unit." Budnik fails to expressly disclose that the sounding pulse from the mobile unit is omnidirectional. In a similar field of endeavor, Scherzer discloses that in conventional

wireless communication systems, information is transmitted from the subscribers base to the base station by broadcasting omnidirectionally (see column 1, lines 27-37). It would have been obvious to a person of ordinary skill in the art at the time of the invention to modify Budnik with Scherzer such that the subscriber units broadcast omnidirectionally in order to avoid the need to point a mobile in a particular direction for reception. The combination of Budnik and Scherzer fails to disclose that a base station is selected based on the communication beams received by the mobile unit. In a similar field of endeavor, Mujitaba discloses a system where upon activation, an MS scans a pre-programmed spectrum in search of CCCII identification signals transmitted from nearby BTSs, measures a signal quality factor such as signal strength, and selects the BTS providing the largest relative signal strength (see column 1, lines 47-56), which reads on the claimed "processor configured to select a base station with which to establishing a wireless communication based on communication beams received by the mobile unit." It would have been obvious to a person of ordinary skill in the art at the time of the invention to modify the combination of Budnik and Scherzer with Mujitaba to include the selecting of a base station at the mobile station in order to reduce the possibility of handover to a nearby BTS that has low signal strength due to a propagation impediment.

43. Regarding claim 52, the combination of Budnik, Scherzer and Mujitaba discloses that the portable subscriber units transmits scheduled messages, such as ACKs and NAKs, and registration requests, which are known to contain address information and reads on the claimed transmitting of a sounding pulse "includes transmitting of

identification information associated with the sounding pulse transmitted the mobile unit."

44. Regarding claim 55, Budnik discloses a wireless messaging system with a plurality of base transmitters and receivers and a plurality of portable subscriber units (see column 3, lines 12-35), which reads on the claimed "communication network for wireless communication with mobile units a plurality of base stations, each providing wireless communication services in a geographic coverage area that may or may not overlap with the geographic coverage areas of other base stations...a plurality of mobile units" The RF signals transmitted by the portable subscriber units to the base receivers comprise responses that include scheduled messages and unscheduled messages, such as registration requests (see column 3, lines 60-67), which reads on the claimed "each base station configured to detect sounding pulses emitted from mobile units in order to establishment wireless communication with such mobile units," and "a transmitter configured to transmit a sounding pulse." Budnik fails to expressly disclose that the sounding pulse from the mobile unit is omnidirectional. In a similar field of endeavor, Scherzer discloses that in conventional wireless communication systems, information is transmitted from the subscribers base to the base station by broadcasting omnidirectionally (see column 1, lines 27-37). It would have been obvious to a person of ordinary skill in the art at the time of the invention to modify Budnik with Scherzer such that the subscriber units broadcast omnidirectionally in order to avoid the need to point a mobile in a particular direction for reception. The combination of Budnik and *Scherzer* fails to disclose that a base station is selected based on the communication

beams received by the mobile unit. In a similar field of endeavor, Mujitaba discloses a system where upon activation, an MS scans a pre-programmed spectrum in search of CCCH identification signals transmitted from nearby BTSs, measures a signal quality factor such as signal strength, and selects the BTS providing the largest relative signal strength (see column 1, lines 47-56), which reads on the claimed "processor configured to select a base station with which to establishing a wireless communication based on communication beams received by the mobile unit ". It would have been obvious to a person of ordinary skill in the an at the time of the invention to modify the combination of Budnik and Scherzer with Mujitaba to include the selecting of a base station at the mobile station in order to reduce the possibility of handover to a nearby BTS that has low signal strength due to a propagation impediment.

45. Claim 41 is rejected under 35 U.S.C. 103(a) as being unpatentable over the prior art as applied in the immediately preceding paragraph and further in view of Mujitaba.

46. Regarding claim **41**, the combination of Budnik, Scherzer and Menich discloses the use of a beamforming antenna (see Budnik column 9, lines 44-50). The combination of Budnik, Scherzer and Menich fails to disclose that a beam will encompass a plurality of UEs. In a similar field of endeavor, Mujitaba discloses a system where any particular beam at a given time may have a width sufficient to provide simultaneous coverage for at least n of the subscriber units at that time, where n is greater than or equal to two (see paragraph 8). It would have been obvious to a person of ordinary skill in the art at the time of the invention to modify the combination of Budnik, Scherzer and Menich with

Mujitaba to include the above beam serving more than ore user in order to conserve system resources.

47. Claims 42 and 50 are rejected under 35 U.S.C. 103(a) as being unpatentable over the prior art as applied in the immediately preceding paragraph and further in view of Oobayashi.

48. Regarding claims 42 and 50, the combination of Budnik, Scherzer and Menich discloses a sounding pulse (see Budnik column 3, lines 60-67) that is omnidirectional (see Scherzer column 1, lines 27-37). The combination of Budnik, Pumadi and Scherzer fails to expressly disclose retransmitting the sounding pulse if a response is not received. In a similar field of endeavor, Oobayashi discloses that if an acknowledgement response does not come from the base station within the predetermined period, the message set to the retransmission standby state is retransmitted at least once (see paragraph 16). It would have been obvious to a person of ordinary skill in the art at the time of the invention to modify the combination of Budnik. Scherzer and Menich with Oobayshi to include the above retransmission when a response is not received in order to provide a more robust system that is less prone to transmission errors.

49. Claims 45 and 51 are rejected under 35 U.S.C. 103(a) as being unpatentable over the prior art as applied in the immediately preceding paragraph and further in view of Velazquez.

50. Regarding claims 45 and 51, the combination of Budnik, Scherzer and Menich fails to disclose that each mobile unit is equipped with GPS and that the sounding pulse

includes location information. In a similar field of endeavor, Velazquez discloses a system where mobile units include GPS (see figure 7) and to initiate a call, a mobile unit transmits its current position to the base station (see figure 8). It would have been obvious to a person of ordinary skill in the art at the time of the invention to modify the combination of Budnik, Scherzer and Menich with Velazquez to include the above uses of GPS in order to avoid the need for complex computations at the server and therefore better use system resources.

Claim Rejections - 35 USC § 103

1. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

2. **Claims 1, 8, 17-18, 21, 22, 23, 29, 33-35, 43, 46- 49, 53-55 and 56** are further rejected under 35 U.S.C. 103(a) as being unpatentable over **Anderson et al.** (US Patent No. 6088590) in view of **Farwell** (US Patent No. 5396541) further in view of **Budnik** (US Patent No. 6052064).

3. Regarding **claim 1**, Anderson teaches a radio network having a plurality of base stations, each providing wireless communication services for mobile units in a respective geographic coverage area that may or may not overlap with the geographic coverage areas of other of the base stations, and an interface (BSC 105, Fig. 1c) connected to the base stations (BS 104, 405, 410, Fig. 1C) method of establishing wireless communication comprising:

transmitting an omnidirectional (omnidirectional pattern, Col. 12 Ln 12-15) sounding pulse (broadly interpreted as control pulse, Col. 9 Ln 15-30; Col. 9 Ln 34-40) from the mobile unit; communicating information related to the detected sounding pulse to the interface by each base station detecting the sounding pulse (Col. 9 Ln 27-34); Anderson further teaches a handoff method and suggests the idea of applying the method of handoff using the pulse signal (Col 10 Ln 46-49, Col. 15 and 16); However, **Anderson** does not specifically teach the step of selecting the one of the base stations that detected the sounding pulse for mobile unit communicated based on the communicated information; and directing a communication beam from the selected base station to the mobile unit to establish wireless communication. However, Anderson does not explicitly teach the step of selecting one of the base stations that detected a sounding pulse for mobile unit communication based on the communicated information. In an analogous art, **Farwell** teaches the step of selecting a handover base station for continuing the wireless communication of the communicating mobile unit based on information communicated from each base station that detected a sounding pulse emitted from the communicating mobile unit during the communication with the serving base station (it is broadly interpreted to be the same as "selecting the base station that detected the sounding pulse for mobile unit communication based on the communicated information", Col. 3 L37-45, C3 L65 – C4 L16); and each base station configured to continue the communicating mobile unit's wireless communication when selected as the handover base station for a communicating with the mobile unit (C4 L6-29). Therefore, it would have been obvious for one of ordinary skill in the art at the time of the invention to combine Anderson's method of handover using omnidirectional pulse to properly adjust the power levels in

combination with **Farwell**'s teaching of selecting the second base station by the network side. This combination would result in minimized interference with neighbor cells due to proper power control from the pulse and longer battery life for the mobile unit since monitoring of the signal strength is performed at the network side. The combination of **Anderson and Farwell** do not expressly teach the step of directing a communication beam from the selected base station to the mobile unit to establish wireless communication. In an analogous art, **Budnik** teaches the concept of directing the beamforming antenna in the direction of the mobile unit (Col. 9 Ln 35-50). Therefore, it would have been obvious for one of ordinary skill in the art at the time of the invention to combine Anderson and Farwell's teaching of the handover method to direct the base station's beam toward the mobile to establish a communication link to ensure optimal signal strength and minimum interference.

4. Regarding claim **23**, **Anderson** teaches a communication network for wireless communication with mobile units comprising: a plurality of base stations (BS 104, 405, 410, Fig. 1C), each providing wireless communication services in a geographic coverage area that may or may not overlap with the geographic coverage areas of other of the base stations; at least one base station interface (BSC 105, Fig. 1c) connected to the base stations; each base station configured to detect sounding pulses (broadly interpreted as control pulse, Col. 9 Ln 15-30; Col. 34-40) emitted from mobile units in order to establish wireless communication with such mobile units; each base station configured to communicate information (Col. 9 Ln 27-34) related to a detected sounding pulse from a mobile unit to a selected interface;

However, Anderson does not explicitly teach that the interface/BSC is configured to select a base station for wireless communication with a mobile unit that transmitted a sounding pulse based on the information communicated from each base station that detected the sounding pulse based on the information communicated from each base station that detected the sounding pulse emitted from that mobile unit. In an analogous art, **Farwell** teaches that each interface when acting as a controlling interface for a serving base station where a communication of a communicating mobile unit is conducted via the serving base station, configured to select a handover base station for continuing the wireless communication of the communicating mobile unit based on information communicated from each base station that detected a sounding pulse emitted from the communicating mobile unit during the communication with the serving base station (it is broadly interpreted to be the same as "the System controller and switch 101 selects the base station that receives the strongest signal among the base stations that can detect signals from the mobile station, Col. 3 L37-45, C3 L65 – C4 L16); and each base station configured to continue the communicating mobile unit's wireless communication when selected as the handover base station for a communicating with the mobile unit (C4 L6-29). Therefore, it would have been obvious for one of ordinary skill in the art at the time of the invention to combine Anderson's method of handover using omnidirectional pulse to properly adjust the power levels in combination with **Farwell**'s teaching of selecting the second base station by the network side. This combination would result in minimized interference with neighbor cells due to proper power control from the pulse and longer battery life for the mobile unit since

monitoring of the signal strength is performed at the network side. The combination of **Anderson and Farwell** do not expressly teach the step of directing the selected handover base station to direct its communication beam to continue the communicating mobile unit's wireless communication via the handover base station. In an analogous art, **Budnik** teaches the concept of directing the beamforming antenna in the direction of the mobile unit (Col. 9 Ln 35-50). Therefore, it would have been obvious for one of ordinary skill in the art at the time of the invention to combine Anderson and Farwell's teaching of the handover method to direct the base station's beam toward the mobile to establish a communication link to ensure optimal signal strength and minimum interference.

5. Regarding claim **35**, it is a method claim that has a subset of limitations claim 23. Therefore it is rejected for the same reasons as claim 23.

6. Regarding claims **8, 29, 43 and 49**, the combination of **Anderson, Farwell and Budwik** fails to explicitly teach that the mobile units are each configured to monitoring the power level of a directed communication beam from a base station that is received by the mobile unit and to transmit an omnidirectional sounding pulse if the monitored power level falls below a predefined level. However, Anderson teaches that the base station sends a message to inform the user station to adjust its power if needed to reduce interference (Col. 9, lines 35-46). Therefore, it would have been obvious for one of ordinary skill in the art at the time of the invention to modify **Anderson, Farwell and Budwik's** teaching of a handoff method to be capable of adjusting power to an appropriate level to reduce interference.

7. Regarding claims **17, 18, 21, 22, 33, 34,46, 47, 53 and 54**, the combination of **Anderson, Farwell and Budwik** fails to explicitly teach the transmitting of an omnidirectional sounding pulse from each of a plurality of mobile units includes transmitting a subsequent sounding pulse of increased power by each mobile unit that does not receive a directed beam communication from a base station within a predefined time period from its transmitting of an omnidirectional sounding pulse. . However, Anderson teaches a method of adjusting the power to a higher or lower level if the mobile is far or close from the base stations respectively (Col. 9, lines 6-15). In addition, it is also well known in the field of communications that after a failed transmission, one of ordinary skill in the art may use back-off algorithm to resend the signal in a predefined period of time. Therefore, it would have been obvious for one of ordinary skill in the art at the time of the invention to modify modify **Anderson, Farwell and Budwik**'s teaching of a handoff method to retransmit the signal with increasing power (if the mobile is far away from the base station) at a predefined period to increase the chance of a successful handoff.

8. Regarding claim 55, **Anderson, Farwell and Budwik** teach a mobile unit that has the corresponding limitations of claim 1 and 23. Therefore it is rejected for the same reasons as claim 1 and 23. **Anderson** further discloses that the mobile unit has an inherent transmitter configured to transmit an omni-directional (Col. 12 Ln 12-15) sounding pulse (broadly interpreted as control pulse, Col. 9 Ln 15-30; Col. 9 Ln 34-40) and an inherent receiver configured to receive communication beams from base stations; and an inherent processor configured to select a handover base station (Col. 16 Ln 50-25) via which the mobile unit is to continue the wireless communication based

on communication beams received by the mobile unit from base stations that detected the pulse transmitted by the mobile unit (see claims 45 and 59 above).

9. Regarding claim **56**, it is an apparatus claim corresponding to the method claim 1. Therefore, it is rejected for the same reasons as in claim 23.

10. Claim **36** is rejected under 35 U.S.C. 103(a) as being unpatentable over **Anderson et al, Budnik** and **Farwell** (US Patent No. 5396541) and further in view of **Keskitalo** (US Patent No. 5893033).

11. Regarding **claim 36, Anderson, Farwell and Budwik** teach all the limitations of the method of claim **35**. They further teaches the step of communicating information related to the detected sounding pulse to the interface by each base station detecting the sounding pulse; However, they fail to teach the step choosing one or more of the base stations that detected the sounding pulse for mobile unit communication based on the communicated information so that only the chosen base stations direct a communication beam to the mobile unit. In an analogous art, Keskitalo teaches that each base station has a selectively operable beamforming antenna, and further comprising: determining a relative location of the mobile unit with respect to the beamforming antennas of base stations neighboring the first base station (Col. 9, lines 41-45) and directing beacon channels of the neighboring base stations toward the mobile unit location to receive the transmitted sounding pulse (Col. 9, lines 63-65). Therefore, it would have been obvious to one of ordinary skill in the art at the time of the invention to modify the communication method to include the step of directing the beam toward the mobile's location to reduce signal interference.

Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Dung Lam whose telephone number is (571) 272-6497. The examiner can normally be reached on M - F 9 - 6 pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Lester Kincaid can be reached on (571) 272-7922. The fax phone number for the organization where this application or proceeding is assigned is (571) 272-6497.

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DL

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